

# Behaviour of Banded Kestrel *Falco zoniventris* in western Madagascar: a possible foraging association with Sickle-billed Vanga *Falculea palliata*

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Des observations sur le comportement du Faucon à ventre rayé *Falco zoniventris* dans l'ouest de Madagascar semblent indiquer que cette espèce s'associe avec la Falculie mantelée *Falculea palliata*. Les auteurs évoquent la possibilité d'une association dans la recherche de nourriture, permettant au faucon d'exploiter les insectes dérangés par la Falculie.

## Introduction

During a study of Madagascar Fish Eagle *Haliaeetus vociferoides* in June–October 1999<sup>7</sup>, we made observations of all bird species encountered on a casual basis<sup>8</sup>. The endemic Banded Kestrel *Falco zoniventris*, considered relatively common in western Madagascar<sup>3</sup>, was seen infrequently throughout the period. This may be more a reflection of its rather elusive nature than true abundance<sup>6</sup>. Daily observations of up to four were made at two localities between mid-August and mid-October 1999. Only two were observed together, and as the two sites were less than 1 km apart, it is possible that the same individuals were involved.

Much of the Banded Kestrel's natural history is poorly known<sup>6</sup>, although descriptions of its foraging and breeding behaviour are available from the north-east of its range<sup>3,6</sup>. We present observations of a

possible foraging association with the endemic Sickle-billed Vanga *Falculea palliata*. This behaviour may be peculiar to the species' western range only, as Sickle-billed Vanga does not extend as far east as Banded Kestrel<sup>4,9</sup>.

## Locality and habitat

The study area lies within the Antsalova wetland region of western Madagascar, c10 km inland of the Mozambique Channel, and includes three lakes, Befotaka, Soamalipo and Ankerika. It is situated at the southern limits of the dry deciduous Tsimembo Forest, which in this area has a mean canopy height of 12–15 m, a well-developed shrub layer, and many vines; there is little or no herbaceous stratum and epiphytic plants are rare<sup>4</sup>. Annual rainfall is 1,000–2,000 mm, and there is a 6–8 month dry season (typically May–November), while mean monthly temperatures are greater than 20°C<sup>1</sup>.

All observations of Banded Kestrels were made at two localities on the shores of Lake Soamalipo; one on the west shore, where intensive observations were conducted at an active Madagascar Fish Eagle nest, and one on the east shore, around The Peregrine Fund's Camp, Ankivahivahy. Banded Kestrels were always observed at degraded forest edges, adjacent to the lake.

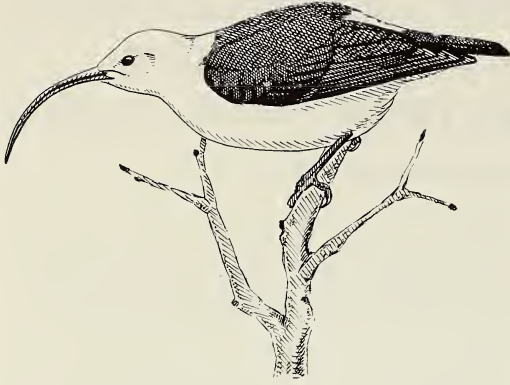
## Sickle-billed Vanga behaviour

The largest representative of the endemic Vangidae family, Sickle-billed Vanga is known to forage in gregarious and noisy groups of up to 20<sup>4</sup>. Their principal foraging technique is to use the long, slender bill as a probe to glean insects from the surfaces of tree trunks and branches, and to extract prey from crevices in the bark<sup>9</sup>.

Two discrete groups of foraging Sickle-billed Vangas were observed daily at both localities, each comprising 18–22 individuals. Both groups foraged systematically throughout their territories, and, as a



Banded Kestrel *Falco zoniventris*  
by Craig Robson



Sickle-billed Vanga *Falculea palliata*  
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group, each would cover the full height of each tree from ground level to the canopy. Both groups fed in specific areas at certain times each day, suggesting a routine foraging pattern. Foraging activity was most noticeable at dawn and dusk, due to the highly vocal chorus of all members of the group, characteristic of this species<sup>4</sup>.

## Possible foraging association

### West-shore locality observations

Despite a relatively intensive search effort from 24 June 1999 onwards, the first observation of a Banded Kestrel was not made until 10 August 1999, at the west-shore locality. An aerial pursuit between two Banded Kestrels was seen along the forest edge, with both individuals calling (the call was similar to the defensive call of both Madagascar Kestrel *Falco newtoni* and Lesser Vasa Parrot *Coracopsis nigra*). This behaviour was interpreted as a territorial dispute, as the first Banded Kestrel was pursued out of the area and the other was observed perching prominently after the chase. This individual was believed to be an adult, based on its overall grey plumage<sup>4</sup>, with yellow legs and bare yellow ocular skin. Its underparts appeared much more heavily banded than those of female Frances's Sparrowhawk *Accipiter francesii*.

The next observation of a Banded Kestrel at this site was made on 31 August 1999. One was observed perching in the canopy, at c17.30 hr (dusk), in close proximity to a flock of foraging Sickie-billed Vanga. The Banded Kestrel intently followed the Sickie-billed Vangas movements, with occasional head-bobbing behaviour. The Sickie-billed Vangas moved through the area in typical foraging mode, with no apparent

interaction between the flock and the Banded Kestrel, which remained perched for a further 20 min but appeared to become more alert (head-bobbing) as it became darker. At 18.00 hr it suddenly flew up above the canopy and appeared to aerial-hunt insects in the erratic flight manner of a crepuscular insectivorous bat. It emitted what we described as a 'sonar'-type call, reminiscent of an echolocation sound heard on a radar. Darkness at 18.06 hr precluded further observations. This appears to be the first account of aerial foraging behaviour in this species. Although the light was too poor to ascertain if this individual was catching insects with its mouth, the presence of rictal bristles on Banded Kestrel (noted on all adults observed by us) may indicate that this foraging technique is not unusual in the species (cf nightjar *Caprimulgus* spp.). However, it appears to be undocumented among the Falconidae, which generally grasp prey with their feet.

A Banded Kestrel was observed daily in the same tree and at the same time during the following month; its appearance coincided with the arrival of the Sickie-billed Vanga flock on each occasion. Numerous hunting forays by the Banded Kestrel were observed. These consisted of prolonged periods of motionless perching, with head-bobbing movements made towards the area where the flock was foraging, before suddenly leaving its perch to make a short, rapid flight to an adjacent tree, swooping upon insect prey perhaps disturbed by the activity of the Sickie-billed Vanga flock. Prey was not specifically identified, other than as small invertebrates. This foraging technique has been described<sup>2,3,6</sup>, although this appears to be the first account of a possible foraging association with Sickie-billed Vanga.

### East-shore locality observations

The first observation of Banded Kestrel was on 20 September 1999, when an adult was observed perch hunting in close proximity to a foraging group of Sickie-billed Vangas at dusk. Hunting forays by the kestrel were identical to those described from the west shore, with the falcon catching insects in trees recently vacated by the Sickie-billed Vanga flock. The Sickie-billed Vanga group of 22 individuals was observed to roost in a low bush (<3 m high), and the Banded Kestrel was lost to sight in the darkness at 18.10 hr.

The following morning, just before dawn, an adult Banded Kestrel was observed perching close to the Sickie-billed Vanga roost bush. The group left the roost at dawn in a noisy flock, and began to forage systematically through the forest. The Banded Kestrel followed the group for c30 min and further hunting

forays were observed. Eventually, the Sickie-billed Vangas flew a short distance across the lagoon (<100 m) and the kestrel followed, until we lost sight of it as the flock continued into the forest. That evening, shortly before dusk, we again located an adult Banded Kestrel perching in close proximity to the Sickie-billed Vanga roost, as the group was heard approaching through the forest. The kestrel began head-bobbing in their direction, before flying towards them. The same behaviour was observed at the same place and time, each dawn and dusk, over the next 22 days. It is unclear whether the Banded Kestrel used the calls of the approaching Sickie-billed Vanga flock as a cue to a hunting opportunity, or whether it chose to perch in the same position at the same time in anticipation of the group's arrival.

### Lack of courtship and nesting behaviour

A second adult Banded Kestrel was observed at the east-shore site on 6 October 1999, hunting independently of the first adult (and was seen over the next six days until our study ended). No interaction was observed between the two individuals, eg no territorial disputes and, conversely, no courtship behaviour, although they were seen perched together in the same tree for several minutes, apparently perch hunting but facing in opposite directions. This apparent lack of courtship and/or nesting behaviour was surprising, given that Colebrook-Robjent<sup>3</sup> reported courtship behaviour in late September, and Thorstrom<sup>6</sup> breeding activity in October. Both authors' observations were made in the north-east of the species' range, rather than the west, perhaps indicating a difference in timing of breeding activity. However, it is also possible that a failed breeding attempt had been made, or that both individuals were non-breeders. We searched for nest-sites at the east-shore location, following reports by Langrand<sup>4</sup> that Banded Kestrel uses old, disused nests of Sickie-billed Vangas, although no evidence was found to support this. Cade<sup>2</sup> speculated that the species may also utilise disused nests of Hammerkop *Scopus umbretta*, which is present in western Madagascar<sup>1</sup>, but was not observed during this study<sup>8</sup>. Banded Kestrel nests in epiphytes elsewhere within its range<sup>3,6</sup>, but the rarity of this vegetation in dry deciduous forests suggests that, in the west, nests must be placed in different structures. Safford & Duckworth<sup>5</sup> refer to a Banded Kestrel visiting a nest (resembling that of a Carrion Crow *Corvus corone*) in south-west Madagascar, but we are unaware of any other documented information. As such, we suggest further research to investigate the nesting and breeding habits of Banded Kestrel in

dry deciduous forests of west Madagascar, which may differ significantly from Banded Kestrels in the north-east wet forests.

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